

CWD Update 82

November 20, 2006

State Updates

New York:

John Major, New York Department of Environmental Conservation (DEC), provides the following: For 2006, Chronic Wasting Disease regulations in New York have been updated in response to the finding of the disease in a moose in Colorado and deer in West Virginia. Hunters bringing carcasses into New York from West Virginia must now process them to remove tissues of concern prior to import, and moose have been added to the list of susceptible species that previously included deer and elk. Last year, more than 8,000 wild deer were tested for CWD in New York following the discovery of CWD in 2 wild and 5 captive deer in April 2005, and no additional animals have tested positive for the disease. Special restrictions are in place within the CWD Containment Area of Oneida and Madison counties governing how harvested deer and specific deer parts may be possessed, transported, and disposed. Mandatory testing of all deer taken in the Containment Area will be occurring again this fall, as well as random testing in other counties throughout New York State. Surveillance will continue at the same level this year. As of November 17, more than 3,200 samples (including more than 800 from the Containment Area) have been tested this year, none have detected CWD. The NY DEC maintains CWD information at: <http://www.dec.state.ny.us/website/dfwmr/wildlife/deer/cwd.html>.

Wisconsin:

The Wisconsin DNR has been diligently working to manage CWD since it was detected in free-ranging deer in 2002. In September, DNR staff held a retreat to discuss their progress, relevant science, and future management options. On October 25, WDNR Secretary Scott Hassett presented a memo to the WI DNR Board, outlining the CWD situation in Wisconsin. Secretary Hassett's memo can be viewed at:

http://www.dnr.state.wi.us/org/land/wildlife/whealth/issues/cwd/doc/Hasset_CWDMgmt.pdf.

Also in Wisconsin, the Legislative Audit Bureau recently completed an audit of Wisconsin's CWD program. The results of the audit (98 page report) can be obtained at:

<http://www.legis.state.wi.us/lab/reports/06-13Full.pdf>.

The four page summary report is at:

<http://www.legis.state.wi.us/lab/reports/06-13Full.pdf>.

Response from the Wisconsin DNR, including their formal response and press release are at:

<http://www.dnr.state.wi.us/org/land/wildlife/whealth/issues/CWD/index.htm>.

Wyoming:

A male white-tailed deer killed in Hunt Area 4, east of Sundance in the Moskee area on November 4, 2006 has tested positive for CWD. Hunt Area 4 borders the Wyoming/South Dakota state line. This is the first CWD-positive animal reported in this hunt area. Press Release available at: http://gf.state.wy.us/services/news/pressreleases/06/11/17/061117_3.asp
Wyoming G&F CWD information is at: <http://gf.state.wy.us/services/education/cwd/index.asp>.

Northeast Association of Fish and Wildlife Agencies:

On November 2, 2006, the Northeast Association adopted a regional CWD Plan. I have attached a copy of the plan, as I am not aware of it being available on any web site. My apologies for the size of the attachment.

Recent Publications

Infectious agent of sheep scrapie may persist in the environment for at least 16 years.

Gudmundur Georgsson, Sigurdur Sigurdarson and Paul Brown
J Gen Virol 87 (2006), 3737-3740; DOI 10.1099/vir.0.82011-0

Abstract: In 1978, a rigorous programme was implemented to stop the spread of, and subsequently eradicate, sheep scrapie in Iceland. Affected flocks were culled, premises were disinfected and, after 2–3 years, restocked with lambs from scrapie-free areas. Between 1978 and 2004, scrapie recurred on 33 farms. Nine of these recurrences occurred 14–21 years after culling, apparently as the result of environmental contamination, but outside entry could not always be absolutely excluded. Of special interest was one farm with a small, completely self-contained flock where scrapie recurred 18 years after culling, 2 years after some lambs had been housed in an old sheep-house that had never been disinfected. Epidemiological investigation established with near certitude that the disease had not been introduced from the outside and it is concluded that the agent may have persisted in the old sheep-house for at least 16 years.

<http://vir.sgmjournals.org/cgi/content/abstract/87/12/3737>

A blood test for prion: disease associated prion aggregate is detected in the blood of infected but asymptomatic animals.

Binggong Chang, Xin Cheng, Shaoman Yin, Tao Pan, Hongtao Zhang, Poki Wong, Shin-Chung Kang, Fan Xiao, Huimin Yan, Chaoyang Li, Lisa L. Wolfe, Michael W. Miller, Thomas Wisniewski, Mark I. Greene, and Man-Sun Sy
Clin. Vaccine Immunol. doi:10.1128/CVI.00341-06

Abstract: We have developed a sensitive in vitro assay for detecting disease associated prion aggregates by combining an aggregation specific enzyme-linked immunosorbent assay (AS-ELISA) with a Fluorescent Amplification Catalyzed by T7 RNA polymerase Technique (FACTT). The new assay, named AS-FACTT, is much more sensitive than AS-ELISA and could detect prion aggregates in the brain of mice as early as 7 days after an intra-peritoneal inoculation of PrP^{Sc}. However, AS-FACTT was still unable to detect prion aggregates in blood of infected mice. To further improve the detection limit of AS-FACTT, we added an additional prion amplification step (Am) and developed a third generation assay, termed Am-A-FACTT. Am-A-FACTT has 100% sensitivity and specificity in detecting disease-associated prion aggregates in blood of infected mice at late but still asymptomatic stages of disease. At a very early stage, Am-A-FACTT had a sensitivity of 50% and specificity of 100%. Most importantly, Am-A-FACTT also detects prion aggregates in blood of mule deer infected with a naturally occurring prion disease, chronic wasting disease. Application of this assay to cattle, sheep, and humans could safeguard food supplies and prevent human contagion.

<http://cvi.asm.org/cgi/content/abstract/CVI.00341-06v1>

Spatial Epidemiology of Chronic Wasting Disease in Wisconsin White-Tailed Deer.

Damien O. Joly, Michael D. Samuel, Julia A. Langenberg, Julie A. Blanchong, Carl A. Batha, Robert E. Rolley, Delwyn P. Keane and Christine A. Ribic
Journal of Wildlife Diseases, 42(3), 2006, pp. 578-588

Abstract: Chronic wasting disease (CWD) is a fatal, emerging disease of cervids associated with transmissible protease-resistant prion proteins. The potential for CWD to cause dramatic declines in deer and elk populations and perceived human health risks associated with consuming CWD-contaminated venison have led wildlife agencies to embark on extensive CWD control programs, typically involving culling to reduce deer populations. We characterized the spatial distribution of CWD in white-tailed deer (*Odocoileus virginianus*) in Wisconsin to facilitate CWD management. We found that CWD prevalence declined with distance from a central location, was locally correlated at a scale of 3.6 km, and was correlated with deer habitat abundance. The latter result is consistent with patterns expected for a positive relationship between density and prevalence of CWD. We recommend management activities focused on culling in geographic areas with high prevalence to have the greatest probability of removing infected individuals. Further research is needed to elucidate the factors involved in CWD spread and infection rates, especially the role of density-dependent transmission.

<http://www.jwildlifedis.org/cgi/content/abstract/42/3/578>

White-Tailed Deer Harvest from the Chronic Wasting Disease Eradication Zone in South-Central Wisconsin.

Julie A. Blanchong, Damien O. Joly, Michael D. Samuel, Julia A. Langenberg, Robert E. Rolley and Janet F. Sausen
Wildlife Society Bulletin 34(3):725-731

Abstract: Chronic wasting disease (CWD) was discovered in free-ranging white-tailed deer (*Odocoileus virginianus*) in south-central Wisconsin in 2002. The current control method for CWD in the state is the harvest of deer from affected areas to reduce population density and lower CWD transmission. We used spatial regression methods to identify factors associated with deer harvest across south-central Wisconsin. Harvest of deer by hunters was positively related to deer density (slope $\frac{1}{4}$ 0.003, 95% CI $\frac{1}{4}$ 0.0001–0.006), the number of landowners that requested harvest permits (slope $\frac{1}{4}$ 0.071, 95% CI $\frac{1}{4}$ 0.037–0.105), and proximity to the area of highest CWD infection (slope $\frac{1}{4}$ 0.041, 95% CI $\frac{1}{4}$ 0.056–0.027). Concomitantly, harvest was not impacted in areas where landowners signed a petition protesting intensive deer reduction (slope $\frac{1}{4}$ 0.00006, 95% CI $\frac{1}{4}$ 0.0005–0.0003). Our results suggest that the success of programs designed to reduce deer populations for disease control or to reduce overabundance in Wisconsin are dependent on landowner and hunter participation. We recommend that programs or actions implemented to eradicate or mitigate the spread of CWD should monitor and assess deer population reduction and evaluate factors affecting program success to improve methods to meet management goals.

Passage of chronic wasting disease prion into transgenic mice expressing Rocky Mountain elk (*Cervus elaphus nelsoni*) PrP^C.

Giuseppe LaFauci, Richard I. Carp, Harry C. Meeker, Xuemin Ye, Jae I. Kim, Michael Natelli, Marisol Cedeno, Robert B. Petersen, Richard Kascsak and Richard Rubenstein
J Gen Virol 87 (2006), 3773-3780; DOI 10.1099/vir.0.82137-0

Abstract: Chronic wasting disease (CWD) of elk (*Cervus elaphus nelsoni*) and mule deer (*Odocoileus hemionus*) is one of three naturally occurring forms of prion disease, the others being Creutzfeldt–Jakob disease in humans and scrapie in sheep. In the last few decades, CWD has spread among captive and free-ranging cervids in 13 US states, two Canadian provinces and recently in Korea. The origin of the CWD agent(s) in cervids is not known. This study describes the development of a transgenic mouse line (Tg^{Elk}) homozygous for a transgene array encoding the elk prion protein (PrP^C) and its use in propagating and simulating CWD in mice. Intracerebral injection of one mule deer and three elk CWD isolates into Tg^{Elk} mice led to disease with incubation periods of 127 and 95 days, respectively. Upon secondary passage, the incubation time was reduced to 108 and 90 days, respectively. Upon passage into Tg^{Elk} mice, CWD prions (PrP^{Sc}) maintained the characteristic Western blot profiles seen in CWD-affected mule deer and elk and produced histopathological modifications consistent with those observed in the natural disease. The short incubation time observed on passage from cervid to mouse with both mule deer and elk CWD brain homogenates and the demonstrated capacity of the animals to propagate (mouse to mouse) CWD agents make the Tg^{Elk} line a valuable model to study CWD agents in cervid populations. In addition, these results with this new transgenic line suggest the intriguing hypothesis that there could be more than one strain of CWD agent in cervids.
<http://vir.sgmjournals.org/cgi/content/abstract/87/12/3773>

Upcoming Conferences:

The 67th Midwest Fish and Wildlife Conference

December 3-6, 2006

Omaha, Nebraska

<http://www.ngpc.state.ne.us/midwest2006/>

A special CWD session will be held on Tuesday, December 5. Eleven papers on CWD will be presented. Titles and abstracts are available on the conference web site. Click on “Program @ Glance” then “CWD Symposium.”

Transmissible Spongiform Encephalopathies: The Definitive American TSE Meeting

February 12-13, 2007

Baltimore, Maryland

<http://www.healthtech.com/2007/tse/index.asp>

The conference agenda can be downloaded from the conference web site. Early registration closes December 1.